

Independent claim 25 recites a method for simultaneously producing a hologram reproducible as both a reflection type hologram and a transmission type hologram, comprising sequentially generating image data of a parallax image string as strip- or dot-shaped hologram elements; sequentially directing said image data to correspondingly selected portions of a recording medium for hologram; contacting at least one surface of the recording medium for hologram with a light inlet block; projecting an object light beam on a first surface of the recording medium for hologram through a one-dimensional diffusion plate located adjacent said first surface such that a void exists between said diffusion plate and said first surface; and projecting a reference light beam on a second, opposite surface of the recording medium for hologram through said light inlet block, wherein the angle of incidence of said reference light beam and the refractive index of the recording medium are chosen such that said reference light beam is totally reflected by said first surface after passing through said recording medium, wherein said light inlet block is substantially columnar-shaped and is adapted for rotating movement.

Independent claim 30 recites an apparatus for simultaneously producing a hologram reproducible as both a reflection type hologram and a transmission type hologram, comprising a recording medium for hologram fed from a film cartridge between a light inlet block and a one-dimensional diffusion plate such that a void exists between a first surface of said recording medium and said diffusion plate and such that said light inlet block contacts a second surface of said recording medium; means for sequentially advancing said recording medium; means for sequentially generating image data of a parallax image string as strip- or dot-shaped hologram elements; means for sequentially directing said image data to correspondingly selected portions of said recording medium; means for projecting an object light beam on said first surface of the recording medium for hologram through said one-dimensional diffusion plate; and means for projecting a reference light beam on said second surface of said recording medium through said light inlet block, wherein the angle of incidence of said reference light beam and the refractive index of the recording medium are chosen such that said reference light beam is totally reflected by said first surface after passing through said recording medium, wherein said light inlet block is substantially columnar-shaped and is adapted for rotating movement.

Frosch discloses a method for making holograms by means of linearly polarized object and reference beams, where the reference beam is reflected inside the photosensitive

emulsion. In this method, a mask 2 is illuminated by a first radiation source from below, thus generating an object beam 0. A reference beam B_1 is formed by a second radiation B_1 impinging a cathetus surface of a prism 7 from the right. This second radiation source impinges on a boundary layer of a photosensitive emulsion 4 and is fully reflected under the angle of total reflection, as a second reference beam B_2 . A hologram H_1 is recorded on the photosensitive emulsion 4, as a result of interference generated between the object beam 0 and the reference beam B_1 . A hologram H_2 is generated from a second interference pattern formed on the photosensitive emulsion 4, as a result of interference between the object beam 0 and the reference beam B_2 . The method is performed in a system having spacers 3 formed on the mask 2. The spacers 3 are used for keeping the emulsion 4 on a glass carrier 5 at a predetermined distance from the mask 2. The upper surface of the glass carrier 5 is covered by a thin lubricating film 6 which is located on the hypotenuse surface of a rectangular triangle prism 7. The Office Action acknowledges that *Frosch* fails to disclose, teach, or suggest that the image data for creating the object beam is sequentially generated parallax image string for creating strip or dot-shaped hologram elements, and that the light inlet block is of a column shape that is adapted for rotation.

McGrew discloses a system for synthesizing strip-multiplexed holograms, with or without coherent light, from a plurality of two-dimensional images. A cinema film 14 is made by placing a subject on a rotating turntable and photographing the subject with a cinema camera rotating at constant speed, so that each frame of the film 14 is taken from a different angle. The cinema film 14 is placed on a film transport so that coherent light emerging from a beam splitter 30 is aligned with a projection axis, and passes through a short focal length lens 34 so that the beam converges. The beam is then filtered, diverged, and converged by a plurality of lenses in a lens system, until a narrow, vertically oriented beam is projected onto an axially elongated vertical, cylindrical lens 54. The cylindrical lens 54 forms the beam into a cylindrical wavefront and projects the beam onto a sheet of a holographic recording medium 56. The Office Action alleges that this cylindrical lens 54 is a column shaped prism, and is analogous to the light inlet block of a column shape, as recited in claims 25 and 30. Applicants submit, however, that because the lens 54 is a cylindrical lens it cannot and does not exhibit any characteristics or properties that are germane to the light inlet block as recited in the claims.

Further, the Office Action alleges that the optical components of both *Frosch* and *McGrew* enable direct light to incident the recording medium, which is a property of the light inlet block that is essential to the recording process, and that the geometric shape of the inlet block will not affect the recording process. Applicant respectfully disagrees. The Office Action conveniently fails to consider that though the objective of a light inlet block is to direct light onto the recording medium, the manner in which the light is directed onto the recording medium and the shape of the directed light may vary depending on the application and the characteristics of the prism block. For example, the prism block of *Frosch* enables interference of a vertically impinging, parallel and coherent radiation object beam 0 and a reference beam B₁ so that a hologram is generated in the photosensitive emulsion layer 4. On the other hand, the prism block of *McGrew* forms a cylindrical wavefront beam and projects this beam onto a vertically oriented sheet of holographic recording medium 56. Thus, although the prism block of *Frosch* and the prism block of *McGrew* are used to form a holographic image, the manner in which these holographic images are formed and the shape of the light beam used to form the holographic image is a direct result of the characteristic shape of each prism block. For this reason, Applicant respectfully submits that the prism block of *McGrew* cannot successfully be integrated into the optical structure of *Frosch*, at least because *Frosch* does not disclose, teach, or suggest the use or need of a cylindrical wavefront to be projected onto the photosensitive emulsion layer 4. In Figs. 5A-5L, *McGrew* identifies various prism shapes that may be used in this design. However, *McGrew* fails to disclose, teach, or suggest a prism having the same shape as that disclosed in *Frosch*, or that any of the disclosed cylindrical prism blocks can be successfully integrated or substituted in a design as disclosed by *Frosch*. For at least these reasons, a *prima facie* case for obviousness has not been established.

In a proper rejection under 35 U.S.C. §103, all of the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Here, both *Frosch* and *McGrew* fail to disclose, teach, or suggest either singly or combined at least a light inlet block that is substantially columnar-shaped and is adapted for rotating movement. At best, *McGrew* teaches that the reference beam projector may be mounted on a motorized carrier so that the angle of incidence of the reference beam may be changed in small increments. See col. 8 lines 23-34. The Office Action has failed to establish that the applied references teach every element recited the claims, but rather takes the position that it

does not matter because at least one of these elements, i.e., the rotating movement of the light inlet block is not a patentable element. Applicant submits that under §103 the patentability of a claim cannot be determined based solely on an opinion or preference of the Examiner, but must be determined based on the concrete showing of the knowledge available to one skilled in the art at the time of the invention. The opinion or preference of the Examiner regarding the novelty of an element recited in the claims is without merit if the Examiner cannot produce a prior art reference supporting the position. As a rule, “assertions of technical facts in areas of esoteric technology must always be supported by citation to some reference work recognized as standard in the pertinent art and the appellant given, in the Patent Office, the opportunity to challenge the correctness of the assertion or the notoriety or repute of the cited reference.” (Citations omitted). *In re Pardo and Landau*, 214 USPQ 673, 677 (CCPA 1982). The support must have existed at the time the claimed invention was made. *In re Merck & Co., Inc.*, 231 USPQ 375, 379 (Fed. Cir. 1986). “Allegations concerning specific ‘knowledge’ of the prior art, which might be peculiar to a particular art should also be supported and the appellant similarly given the opportunity to make a challenge.” (Citations omitted). *In re Pardo and Landau*, 214 USPQ 673, 677 (CCPA 1982).

Because the Office Action acknowledges that *Frosch* and *McGrew* fail to disclose, teach, or suggest at least a light inlet block that is substantially columnar-shaped and is adapted for rotating movement, Applicant submits that a *prima facie* case for obviousness has not been established.

In addition the Office Action alleges that because there is nothing that prevents the light inlet block of *Frosch* from rotational movement, the light inlet block can be under rotational movement while in contact with the recording medium, and it will not change the recording process. *See* Office Action (Paper 01282004) item 6. Applicant disagrees and failed to find any basis or merit for this reasoning in the discussions or teachings of either *Frosch* or *McGrew*. For at least this reason, this statement in the Office Action is mere speculation, at best. Moreover, even if the alleged statement of the Office Action is true, which Applicant submits it is not, the prevention of rotational movement neither implies nor suggests the motivation for combining *Frosch* with *McGrew* to achieve the claimed results. Applicant notes that obviousness “cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination.” ACS Hosp. Sys. V. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929,

933 (Fed. Cir. 1984). For at least these reasons, a *prima facie* case for obviousness has not been established.

In sum, each of claims 25 and 30 recites said inlet block is substantially a columnar shape and is adapted for rotating movement. *Frosch* and *McGrew* either singly or combined, fail to disclose, teach, or suggest at least this claim element. In particular, even if the cylindrical lens 54 of *McGrew* could be substituted into the lens system of *Frosch*, Applicant submits that the resulting system would not achieve the results as recited in claims 25 and 30, but would destroy the intended results of *Frosch* at least because of differing reflecting properties and characteristics that exist between the references. For at least these reasons, a *prima facie* case of obviousness has not been established.

To establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Moreover, obviousness "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." *ACS Hosp. Sys. V. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). For at least these reasons, Applicants submit that the rejection of claims 25 and 30 under 35 U.S.C. §103 should be withdrawn, and these claims be allowed.

Claims 27 and 28 depend from claim 25. Claims 31, 33, and 34 depend from claim 30. By virtue of this dependency, Applicants submit that claims 27, 28, and 31-34 are allowable for at least the same reasons given above with respect to their respective base claims. In addition, Applicants submit that claims 27, 28, and 31-34 are further distinguished over *Frosch* and *McGrew* by the additional elements recited therein, and particularly with respect to each claimed combination. Applicants respectfully request, therefore, that the rejection of claims 27, 28, and 31-34 under 35 U.S.C. §103 be withdrawn, and these claims be allowed.

Claims 29, 35, and 38-39 were rejected under 35 U.S.C. §103(a) as unpatentable over *Frosch* and *McGrew*, and further in view of *Hotta et al.*, U.S. Patent No. 5,504,903. Claims 36 and 37 were rejected under 35 U.S.C. §103(a) as unpatentable over *Frosch* and *McGrew* and further in view of *Ishikawa et al.*, U.S. Patent No. 5,798,850. Applicants respectfully traverse these rejections.

Claim 29 depends from claim 25. Claims 35-39 depend from claims 30. By virtue of this dependency, Applicants submit that claims 29 and 35-39 are allowable for at least the same reasons given above with respect to their respective base claims. In addition, Applicants submit that claims 29, 35, and 38-39 are further distinguished over *Frosch*, *McGrew*, and *Hotta* by the additional elements recited therein, and particularly with respect to each claimed combination. Likewise, Applicants submit that claims 36 and 37 are further distinguished over *Frosch*, *McGrew*, and *Ishikawa*, by the additional elements recited therein, and particularly with respect to each claimed combination. Applicants respectfully request, therefore, that the rejection of claims 29 and 35-39 under 35 U.S.C. §103 be withdrawn, and these claims be allowed

In view of the above, each of the claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

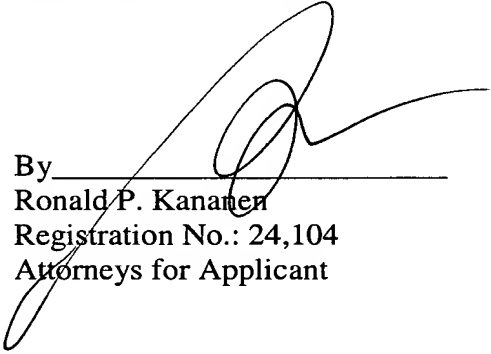
Conclusion

Based on at least the foregoing amendments and remarks, Applicants submit that claims 25, 27-31, and 33-39 are allowable, and this application is in condition for allowance. Accordingly, Applicants request favorable reexamination and reconsideration of the application. In the event the Examiner has any comments or suggestions for placing the application in even better form, Applicants request that the Examiner contact the undersigned attorney at the number listed below.

Applicant believes no fee is due with this request. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. SON-1112/DIV from which the undersigned is authorized to draw.

Dated: April 12, 2004

Respectfully submitted,

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